

WHAT IS CLAIMED IS

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1. A branch prediction method comprising the steps of:

- 10 a) determining branch prediction data indicating a state of branch prediction according to whether a branch is actually made or not;
- b) performing a branch prediction according to the branch prediction data; and
- 15 c) correcting the branch prediction data according to whether a branch is actually made or not.

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2. The method as claimed in claim 1, wherein the step c) selects a predetermined branch prediction changing table from a plurality of branch prediction changing tables previously weighted according to a history of whether or not branches

25 are actually made, reads therefrom branch prediction updating data corresponding to the branch prediction data, and determines the read branch prediction updating data as a new branch prediction data.

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3. The method as claimed in claim 1, wherein: the step c) comprises the steps of:

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c-1) obtaining branch prediction data corresponding to a branch instruction from a branch prediction table;

c-2) obtaining branch prediction supplementary data according to a history of whether or not branches are actually made;

c-3) selecting a branch prediction
5 updating table corresponding to the branch prediction supplementary data from a plurality of branch prediction updating tables storing branch prediction data having different weights in transition directions of the branch prediction data,
10 and outputting branch prediction updating data corresponding to the branch prediction data; and

c-4) updating the branch prediction table according to the branch prediction updating data of the branch prediction updating table.
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4. The method as claimed in claim 1,
20 wherein the step c) sets weightings in transition directions of the branch prediction data according to preset profile information.

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5. An arithmetic and logic unit comprising:

a first part determining branch prediction
30 data indicating a state of branch prediction according to whether a branch is actually made or not;

a second part performing a branch prediction according to the branch prediction data;

35 a third part correcting the branch prediction data according to whether a branch is actually made or not.

6. The unit as claimed in claim 5 wherein
said third part selects a predetermined branch
prediction changing table from a plurality of branch
prediction changing tables previously weighted
5 according to a history of whether or not branches
are actually made, reads therefrom branch prediction
updating data corresponding to the branch prediction
data, and determines the read branch prediction
updating data as a new branch prediction data.

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7. The unit as claimed in claim 5,
15 wherein said third part comprises:
a part obtaining branch prediction data
corresponding to a branch instruction from a branch
prediction table;
a part obtaining branch prediction
20 supplementary data according to a history of whether
or not branches are actually made;
a part selecting a branch prediction
updating table corresponding to the branch
prediction supplementary data from a plurality of
25 branch prediction updating tables storing branch
prediction data having different weights in
transition directions of the branch prediction data,
and outputting branch prediction updating data
corresponding to the branch prediction data; and
30 a part updating the branch prediction
table according to the branch prediction updating
data from the branch prediction updating table.

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8. The unit as claimed in claim 5,

wherein said third part sets weightings in transition directions of the branch prediction data according to preset profile information.

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10 9. An information processing apparatus comprises the arithmetic and logic unit claimed in claim 5.

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 10. An arithmetic and logic unit comprising:

 a first part performing a branch
20 prediction in response to a branch instruction;

 a second part updating a transition probability of branch prediction according to whether a branch is actually made or not;

 a third part detecting that a process is
25 switched; and

 a fourth part initializing the branch prediction information when said third part detects that the process is switched.

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 11. The unit as claimed in claim 10, wherein said fourth part performs initialization
35 based on prediction information given to the branch instruction.

12. The unit as claimed in claim 10,
wherein said fourth part performs initialization
according to a branch destination of the branch
instruction.

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13. A branch prediction method comprising
10 the steps of:

a) performing a branch prediction in
response to a branch instruction;

b) updating a transition probability of
branch prediction according to whether a branch is
15 actually made or not;

c) detecting that a process is switched;
and

e) initializing the branch prediction
information when the step c) detects that the
20 process is switched.

14. The method as claimed in claim 13,
25 wherein the step e) performs initialization based on
prediction information given to the branch
instruction.

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15. The method as claimed in claim 13,
wherein the step e) performs initialization
35 according to a branch destination of the branch
instruction.

16. An information processing apparatus comprising:

a first part performing a branch prediction in response to a branch instruction;

5 a second part updating a transition probability of branch prediction according to whether a branch is actually made or not;

a third part detecting that a process is switched; and

10 a fourth part initializing the branch prediction information when said third part detects that the process is switched.

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17. The apparatus as claimed in claim 16, wherein said fourth part performs initialization based on prediction information given to the branch instruction.

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25 18. The apparatus as claimed in claim 16, wherein said fourth part performs initialization according to a branch destination of the branch instruction.